

ENERGY EFFICIENCY SECTOR: COMMERCIAL

◆ ARIZONA

City-wide Energy Management

The City of Phoenix Energy Management Program (EMP) began in 1978 with the underlying goal of eliminating inefficient energy use in government facilities in a cost-effective manner. The program also aimed to promote renewable energy use, provide leadership in the community, and raise awareness of energy use among employees. Initial measures to reduce energy consumption were “no and low cost” initiatives, such as the use of compact fluorescent lamps, and installing light switches in individual offices rather than using master switches. In 1983, a Savings Reinvestment Plan was adopted by the city to ensure future funding of the EMP. The Plan requires that each year 50 percent of documented energy savings be reinvested in additional energy efficiency improvements.

As a result of the establishment of the Savings Reinvestment Plan, the EMP had money to spend on additional measures to improve energy efficiency. One important activity was the development of a strategy to maximize energy efficiency, which involved 1) energy audits of existing buildings and design advice for new construction, 2) installing/retrofitting the best and most appropriate technology and equipment, 3) combining energy efficiency with ongoing maintenance, and 4) promotion of state-of-the-art building management. Using the money from energy savings, the City of Phoenix has implemented over 1000 energy efficiency projects.



Results:

The Energy Management Plan has resulted in huge savings in electricity and natural gas use, with 1978-94 cumulative electricity savings of 246,106 MWh, and cumulative natural gas savings of 220,195 million cubic feet (MCF). These electricity and gas savings have resulted in the avoidance of 101,301 metric tons (MT) of CO₂

emissions (or 27,655 MTCE*). For 1993-94, the EMP accounted for annual reductions of 36,769 MWh electricity, 32,898 MCF natural gas, and an estimated 15,195 MT of CO₂ (or 4,150 MTCE*). Additionally, the energy savings accounted for a reduction of approximately 65 MT of NO_x and 136 MT of SO₂.** The electricity and gas savings also result in huge cost savings to the city. Annual energy costs have been reduced by about 10 percent, equivalent to an estimated \$4 million dollars per year. One particularly successful measure is the overall lighting improvements, which alone are projected to account for \$4 million in savings over the first ten years.

Energy Savings	Cost Benefits	Greenhouse Gas Reductions
36,769 MWh/yr 32,898 MCF/yr (1993-94 electricity and natural gas)	\$4,000,000/yr (city electricity and natural gas savings)	4,150 MTCE*/yr (1993-94)

Principal Actors:

The Energy Management Program was begun by the City of Phoenix in cooperation with the Arizona State Energy Office, using grants from the federal Department of Energy. The Urban Consortium’s Energy Task Force also provided funds for pilot projects.

Additional Information:

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This case study is based on information from the Climate Institute.

* MTCE = Metric Tons of Carbon Equivalent. Annual emissions for 1993-94 were estimated by taking 15% of the 1978-94 cumulative total emission reductions. 1993-94 electricity and natural gas savings represented 15% of the 1978-94 cumulative.

** The following conversion factors were applied to the original data: 1.77 MT NO_x / GWh and 3.69 MT SO₂ / GWh, MT = metric tons.